



铁路行业用钢

RAILWAY INDUSTRY STEEL

太钢产品分行业系列册 Products Serial Catalogs Of Tisco For Different Industries

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太原钢铁(集团)有限公司
Taiyuan Iron & Steel (Group) Co., Ltd.



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太钢简介

BRIEF ON TISCO

太原钢铁(集团)有限公司(简称太钢)是中国特大型钢铁联合企业和全球产能最大、工艺技术装备水平最高、品种规格最全的不锈钢企业。经过70年发展,已具备1000万吨以上钢、铁、材的生产能力,其中不锈钢产能达300万吨。

太钢是中国第一炉不锈钢、第一炉硅钢、第一张硅钢片的诞生地。拥有铁矿石等钢铁冶炼原料的采掘与加工、钢铁冶炼、钢铁材料压力加工、冶金设备及备品备件制造等方面先进技术和装备,主要产品有不锈钢、冷轧硅钢片(卷)、热连轧卷板、车轴钢、合金模具钢、军工钢等。产品广泛应用于石油化工、交通运输、建筑装饰、家用电器、医疗食品等行业及神舟系列飞船、嫦娥一号、“东风”系列火箭等高端领域,进入三峡水利、西气东输、奥运场馆等国家重点工程。

太钢的发展目标是,加快建设全球最具竞争力的不锈钢企业,到2010年,以不锈钢为主的品种、质量、成本、研发、节能、环保、效率、服务等各项指标达到国际一流水平,建设具有国际竞争力的大企业集团。

Taiyuan Iron and Steel (Group) Co. Ltd. (TISCO) is a gigantic steel complex in China and a world leading stainless steel producer with largest capacity, full range of products and state of the art facility. With 70 years development, the capacity of pig iron, crude steel and rolled products increased over 10 million ton, including 3 million tons of stainless steel.

TISCO produced the first heat of stainless steel, first heat of silicon steel and first sheet of silicon steel. It is well equipped for mining and beneficiation (such as iron ores), ironmaking, steelmaking, rolling and manufacture of metallurgical equipment and spare parts. Main products include cold rolled stainless and silicon sheet/coil, hot rolled coil, axle steel, die steel and military steel. They are widely used in petrochemical industry, transportation, construction, decoration, home appliance, medical apparatus and food industry, they are also used for high-end application and national key projects as Shenzhou spaceship, Chang'e-1 Moon Detector, Dongfeng rocket series, Three Gorges project, West-East natural gas transmission project and Olympic games facility.

Our goal in development is to expedite building TISCO as the most competitive stainless steel producer in the world, holding the world leading position by 2010 in terms of range, quality, cost, R&D, energy saving, environment protection, efficiency and service, Our target is to create an international enterprises group of strong competitive edges out of Taigang.



◆ 铁路行业用钢概况

Brief introduction of railway steel

太钢长期以来致力于铁路产品开发，为铁路产品用钢国产化作出了积极贡献，赢得了广大铁路车辆、设备制造企业广泛赞誉。

太钢铁路产品用钢目前主要包括：车轴钢、车轮钢、客（货）车用不锈钢板、高强耐候钢、不锈钢焊接用焊盘条等。

1998年太钢开始生产车轴钢，产品先后获得国家科技部颁发的国家重点新产品奖、山西省科学技术进步奖和钢铁产品金杯奖，该产品质量优异、性能稳定广泛应用于各类火车车轴制造，国内市场占有率长期保持在90%以上。

2002年太钢开始批量生产火车轮用钢，产品获得山西省科学技术进步一等奖，广泛应用于各类轨道车辆制造。

2003年太钢开始试制客车用不锈钢，先后用于北京八通线、北京5#线地铁、200公里/小时动车组。截至目前，我公司客车用不锈钢已成功应用于北京地铁1号线、2号线、5号线、10号线、沈阳地铁2号线、西安地铁2号线、成都地铁1号线等国内所有的不锈钢轨道客车制造中；至今已开发LT、DLT、ST、MT、HT各强度级别和符合欧标EN1.4318的材料，可满足动车组、轻轨、地铁车辆行业不同强度级别的使用要求。

2005年太钢在国内率先开发货车车体用不锈钢TCS和T4003，并于2006年批量生产，用于制造大秦线C80运煤车，获得了良好的社会效益。在此基础上T4003产品用于生产出口澳大利亚矿车。

2009年太钢高强耐候钢通过铁道部认证，并用于铁路干线车辆生产。

“以人为本、用户至上、质量兴企、全面开放、不断创新”是太钢的核心价值观，“为全球消费者提供最精美的不锈钢产品”是太钢的企业使命，我们致力于为铁路行业用户提供钢材使用的解决方案。



For a long time, TISCO has committed itself to the railway steel product development and has made greater contributions to the railway steel products made of the domestic steel and has been honored by lots of railroad and railcar equipment manufacturing enterprises.

TISCO steel products for the railway purpose mainly consists of : axle steel, wheel steel, stainless steel plate used for railway goods and passenger car, high strength atmosphere resistant steel, welding wire steel for stainless steel.

In 1998, TISCO began to produce axle steel, which is awarded the title of State Key New Product Science by state science and technology dept, Shanxi and Technology Progress and Iron & Steel Products Golden Cup. This new product is widely used into all kinds of train axle due to its stable and excellent quality with the domestic train axle coverage by above 90% for a long time.

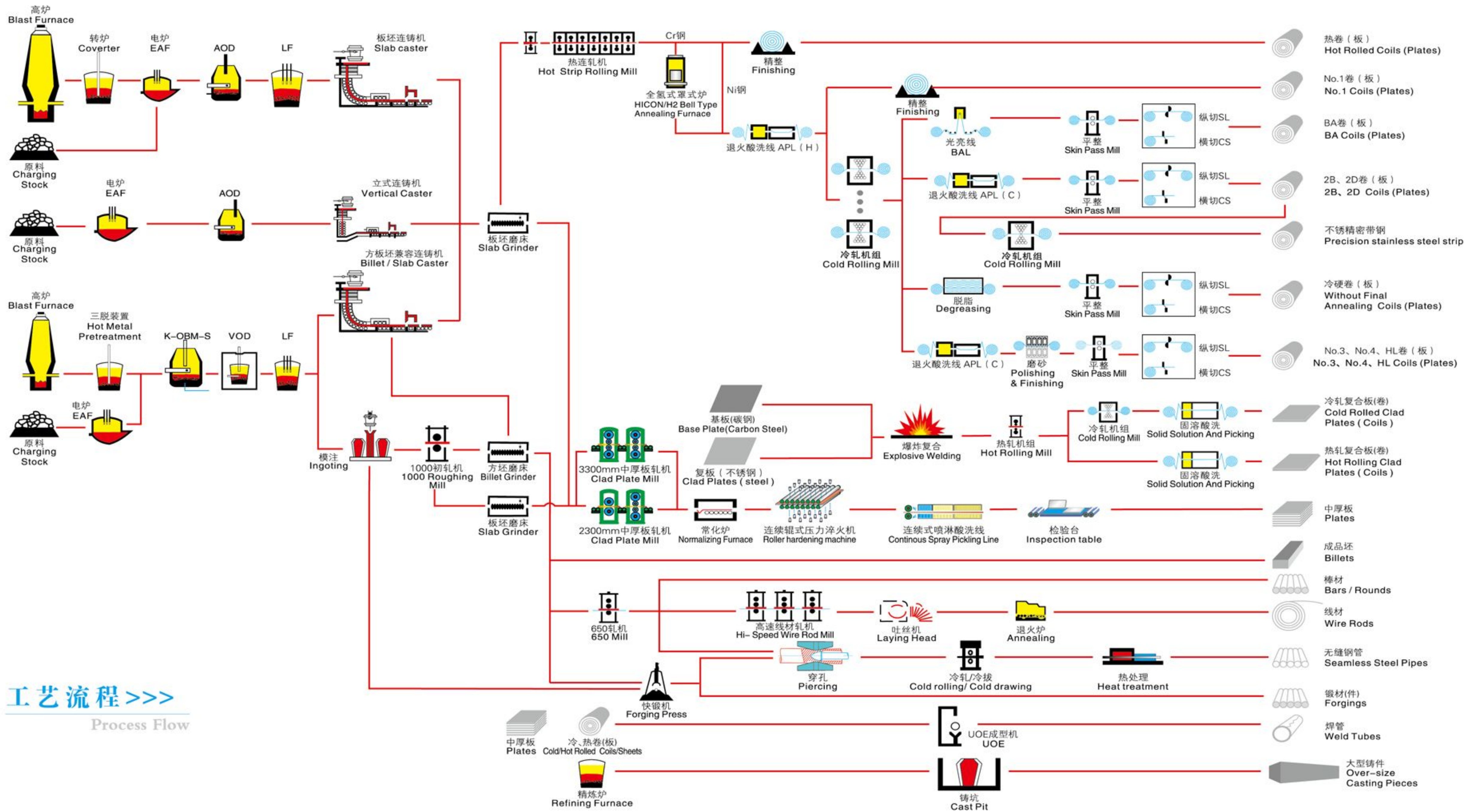
In 2002, TISCO started to develop the steel used for train wheel in batches and this new product has been awarded the first-prize by Shanxi Province Science and Technology Progress and also it is largely used for many kinds of rail car manufacturing.

In 2003, TISCO succeeded in trial-manufacturing the first passenger car made of stainless steel. It is early or late used for Beijing Batong Line, Beijing Subway No.5 Line, and engine team train of 200kilo/h. Up to now, TISCO passenger car stainless steel is successfully applied into Beijing subway 1#, 2#, 5# and 10#, Shenyang subway 2# Line, Xi'an subway 2# Line, Cheng-du subway 1# Line; until now, we have developed LT, DLT, ST, MT, HT steel material with all kinds of strength grade equivalent to Europe Standard EN1.4318 and the requirements with different strength and grade steel for engine team train, light train and subway train car industry have been met.

In 2005, TISCO developed stainless steel TCS and T4003 used for goods train body for the first time in China and then put it into batch production in 2006 for making Daqin Line C80 coal train with very satisfied social efficiency. Based on this achievement, T4003 product steel is applied for manufacturing Australian tramcar.

In 2009, TISCO high strength weathering steel was certified by China Railway Ministry and it was confirmed for the production of railway line train.

“People oriented, consumers first, quality prospering company, comprehensive opening-up, continuous innovation” is TISCO's core value outlook. “Supplying the global customer with the most excellent stainless steel products” is TISCO's mission. We are dedicated to offer the solutions to customers in railway industry.



研发能力>>>

Research and Development

太钢与铁道部门紧密合作，成功开发了车轴、车轮、客（货）车不锈钢厢体、耐候等铁路行业用钢，车轴钢市场份额达到90%以上。

对国外车辆用耐蚀材料进行了深入研究，具备了开发强度高、韧性好、耐腐蚀性和成型性优良的适合于我国轨道车辆专用耐蚀材料的能力。

采用的产品标准达到了日本著名车辆生产厂不锈钢材料采购标准水平。

学习研究了国外有关车辆用不锈钢生产厂家的生产经验和工艺，经过优化和实施，并且投资新建了保证厚规格高强度级别钢板板型的单张拉矫机组，保证了产品的性能均匀性和平直度。

新建的冷轧不锈钢生产线，装备有厚规格高强度级别车辆用钢的纵、横切和矫直设备。

TISCO is closely collaborated with railway department to develop the steel for axle, wheel, carriage body, and other atmosphere resistant steel etc. for railway industry, with axle steel for market coverage by above 90%.

The deep research of the weathering steel material is done for foreign train and TISCO is capable of producing high strength, good toughness, anti-corrosion and good molding steel which is fit for the railway car production.

Product is conformity to the stainless steel material standard required by Japanese famous railway car factory.

Production experience and new process of stainless steel producers for vehicle from foreign countries have been studied and investigated, and some of the new process has been optimized and implemented. And at the same time, single straightening unit equipped with thick gauge and high strength shape technology is installed to ensure the uniformity and flatness of the products.

Newly stainless steel cold rolling mill is now equipped with slitting and transverse straightening unit for thick gauge and high strength grade car.



2007年在国家认定的438家企业技术中心中，太钢技术中心排名第4位。

TISCO Technology Center ranks the 4th place out of 438 enterprise-based technology centres accredited nationwide.



国家级实验室 National level laboratory



扫描电镜
Scanning Electron Microscope

热模拟试验机
Thermal Simulating Tester



透射电镜
Transition Electron Microscope

全自动电子拉伸试验机
Automatic electronic tensile tester

认证、荣誉 >>>

Certification & Honors



- ◆ 《高质量不锈钢板材技术开发》获国家科技进步二等奖
- ◆ 《AOD炉炉龄、工艺技术开发》等三项成果获山西省科技进步一、二等奖
- ◆ 《太钢含氮不锈钢研制》等九项成果获冶金科学技术进步一、二、三等奖
- ◆ 《双相不锈钢复合板》等六种产品分别获得国家重点新产品奖、山西省优秀新产品奖
- ◆ 不锈钢2B板被科技部认定为国家高新技术产品
- ◆ 《AOD炉用氮气进行氮合金化工艺》《VOD冶炼不锈钢高碳区脱氮方法》等专利80余项
- ◆ 不锈钢中板通过了TUV认证，并获得了冶金实物质量金杯奖
- ◆ 双相不锈钢通过了中国船级社CCS认证
- ◆ “Technical development of high quality stainless steel flat product” won second prize of state technical progresses.
- ◆ “AOD campaign, production technology development” and other two won the first and second prizes of Shanxi technical progresses.
- ◆ “Production technology and new grade development of Nitrogen-containing stainless steel by TISCO” won second prize of state technical progresses.
- ◆ Duplex stainless steel clad plate and so on six products were honored as among statewide new products and Shanxi great new products, respectively.
- ◆ Stainless steel 2B grade was approved by the Ministry of Science & Technology as the state hi-tech products.
- ◆ More than 80 patents such as “Nitrogen alloying process by nitrogen gas in AOD” and “Denitrification process in the phase of high carbon of stainless steel smelting in VOD).
- ◆ Stainless steel plate passed TUV examination and was rewarded Golden Cup of physical quality of metallurgical product.
- ◆ Duplex stainless steel passed CCS, China Classification Society, examination.



常规产品 >>>

Conventional Products

钢类 Grade	牌号 Brand No.	规格 (mm) Specification (mm)	单重 Unit Weight (t)	标准 Standards	用途 Applications	
Section material 车轴钢 Axle steel	LZ40	200 ² ~ 350 ²		GB5068-1999	货车车轴 Freight Vehicle Axle	
	LZ50			TB/T2945-1999	货车车轴 Freight Vehicle Axle	
	JZ			JCZP-01-98	机车用车轴 Locomotive Axle	
	JZ35T			Q/TB3063-2008	出口印度车轴 Axle exported to India	
	JZ45			GB5068-1999	机车用车轴 Locomotive Axle	
	JZ50			GB5068-1999	机车用车轴 Locomotive Axle	
	AISI4140			Q/TX013-2009	出口新加坡、加拿大车轴 Axle exported to Singapore & Canada	
	SFA60			Q/TB3054-2007	出口韩国货车车轴 Freight Vehicle axle exported to Korea	
	EMS804			Q/TX027-2009	9600KW大功率机车车轴 High power locomotive axle with 9600KW	
	A1			Q/TX-041-2007	大秦运煤专线大功率机车车轴 High power locomotive axle for Datong-Qinhuangdao Coal line	
	EA1N			Q/TX016-2007	广州地铁车轴 Axle for Guangzhou Subway	
	EA1T			Q/TX036-2009	供南京浦镇车轴，整车出口 Axle for Nanjing Puzhen, exported completely	
	钢轮钢 Wheel steel			EA4T	Q/TX054-2009	供长客小于200公里/小时车轴 Axle for long-distance passenger carriage, < 200km/h
				CL60K	Q/TX055-2009	供长客小于200公里/小时车轴 Axle for long-distance passenger carriage, < 200 km/h
Q/TX073-2009		供株电-上海地铁11号线车轴 Axle for Zhudian-Shanghai Subway No.11				
Q/TX036-2004		国内地铁用轴 Axle for domestic subway				
Q/TB3040-2005		国内客车、货车车轮 Wheel for domestic passenger carriage and freight vehicle				
Q/TX3089-2008		国内地铁车轮 Wheel for domestic subway				
ER7	Q/TX011-2009	出口地铁车轮 Wheel for exported subway				
Hot rolled coil 不锈钢板 Stainless steel plate	ER8	Q/TX010-2009	出口地铁车轮 Wheel for exported subway			
	ER9	Q/TX3089-2008	国内地铁车轮 Wheel for domestic subway			
	AAR-A、B、C级	Q/TX3089-2008	国内地铁车轮 Wheel for domestic subway			
		Q/TX3146-2005	出口北美车轮 Wheel exported to North America			
	TCS345	3-12*900-2000*L		运装货车[2005]478号 Transit Freight Vehicle [2005]478	货车车体、梁柱及风缸 Freight vehicle body, beam & cylinder	
				运装货车[2008]186号 Transit Freight Vehicle [2008]186	货车车体、梁柱及风缸 Freight vehicle body, beam & cylinder	
	Q450NQR1	2-20*900-2100*L		10-40	TB/T1979-2003	货车箱体、底板及立柱 Freight vehicle body, base plate & column
					09CuPCrNiA	10-40

产品介绍 >>>

Product Introduction

一. 车轴钢、钢轮钢 Axle steel and Wheel steel

◆ 产品的性能、特点、应用领域及用途, 应用业绩表述等

Description on performance, characteristic, application, usage, reference and so on.

品种 Grade	产品的性能、特点 Performance and characteristic	应用领域 Application	用途 Usage	业绩 Reference
车轴钢 Axle steel	产品成份控制窄化、残余元素含量低、成份稳定, 晶粒细小, 气体含量极低, 钢质纯净, 力学性能优良、组织致密, 使用专用辊轧制, 外型平整、尺寸精度高, 100% 探伤检验出厂, 全面达到相应标准规定 Narrow control composition, low contents of remainder elements, stable composition, fine grain, extremely low gas content, purification, good mechanical performance. Compact Structure, rolling by special roller, profile trimness, High dimension precision, 100% NDT detection, meeting Corresponding standards and regulations	国内外铁路机车、货车 Local and abroad railway engine and lorry	各类铁路车辆用轴 Railcar axle	用于大秦运煤专线大功率牵引机车、国内城轨、地铁, 制成车轴出口欧、美、亚等十几个国家 Traction engine for coal transportation on Dalian-Qinhuangdao line, local city rail, metro, manufactured axle exported to Euro, America, Asia and others.
钢轮钢 Wheel steel	产品成份控制窄化、残余元素含量低、成份稳定, 晶粒细小, 气体含量极低, 钢质纯净。 Narrowing composition, low contents of remainder elements, stable composition, fine grain, extremely low gas content, purification	国内外铁路机车、货车 Local and abroad railway engine and lorry	各类铁路车辆用轮 Railcar axle	制成车轮用于广州、上海、武汉等地铁、出口欧、美、亚等十几个国家 Manufactured axle for Guangzhou, Shanghai, Wuhan and other cities. Manufactured axle exported to more than ten countries such as Euro, America, Asia
不锈钢板 Stainless steel plate	自重轻、载重量大、寿命长、耐蚀耐磨性能好、维护成本低, 周期寿命综合经济效益明显 Light, big load, long lifetime, corrosion-resistance, wear-resistance, less maintenance cost, long cycle lifetime and prominent economical effectivness	铁路货车 Freight train	车体 body	成功应用于大秦铁路的C80B重载运煤敞车、出口澳大利亚的不锈钢矿石车, 运煤车 Successful application in C80B stainless steel vehicle on Dalian-Qinhuangdao line and Stainless steel mineral vehicle exported to Australia, and coke transportation car

◆ 图表: 包括品种、成分、力学性能、生产能力等

Table is as below including grade, composition, mechanical performance, and throughput, etc

品种 Steel Grade	成分、力学性 Composition and mechanical performance	生产能力 Throughput
车轴钢 Axle steel	商业秘密 Business secret	2.5万吨/月 25000t/month
钢轮钢 wheel steel	商业秘密 Business secret	0.8万吨/月 8000t/month
不锈钢板 Stainless steel plate	商业秘密 Business secret	3万吨/月 30000t/month
高强耐候钢 High strength atmosphere-resistance steel	商业秘密 Business secret	3万吨/月 30000t/month

◆ 相关行业图片 Reference picture



大秦运煤专线大功率牵引机车
Traction engine for coal transportation on Daqin line



大秦铁路C80B不锈钢车
C80B stainless steel vehicle on Dalian-Qinhuangdao line



出口澳大利亚不锈钢矿石车
Stainless steel mineral vehicle exported to Australia

二. 客车用不锈钢 Stainless Steel for Passenger Carriage

◆ 产品的性能、特点、应用领域及用途, 应用业绩表述等

- 性能: 焊接性能好, 焊后无缺陷, 屈服强度、疲劳强度高, 薄规格减重
耐蚀性高, 对盐分、铁粉、铜粉等有耐蚀性, 降低保养费用
- 特点: 耐蚀性能好, 强度高, 焊接性能良好, 周期寿命成本低
SUS301L (00Cr17Ni7) 通过不同的加工, 可以很好的满足车辆使用要求
- 应用领域及用途: 轨道客车及大线车车体的制造
- 应用业绩
应用于北京地铁1号线、2号线、5号线、10号线、沈阳地铁2号线、西安地铁2号线、成都地铁1号线等国内所有的不锈钢轨道客车制造中。

◆ Performance, features, usage, and application reference:

- Performance: Good welding property without defects after welding.
High yielding strength and fatigue strength.
Thin gauge light sheet. High anti-corrosion, especially for salt, ferrous powder and copper powder.
Low cost for maintenance.
- Features: Good corrosion-resisting property.
High Strength.
Excellent Welding Property.
Low cost for life cycle.
SUS301L (00Cr17Ni7) meeting all requirements for excellent vehicle usage via different processing.
- Usage and application: Manufacturing of railroad passenger car-body and big line car-body.
- Application reference:
Used in manufacturing of domestic stainless-steel railroad passenger car for Beijing Subway No 1, No 2, No 5 and No 10 Line, as well as Shenyang Subway No 2, Xi'an Subway No 2, Chengdu Subway No 1, etc.

牌号 Brand No	强度级别 Strength Grade	平整代号 Skin Passing No.	表面加工 Surface Processing	钢号标志 Steel Grade
00Cr17Ni7 (SUS301L)	LT		2B/No1/BG/HL	00Cr17Ni7--LT (SUS301L--LT)
	DLT	1/4H		00Cr17Ni7--DLT (SUS301L--DLT)
	ST	1/2H	2B/BG/HL	00Cr17Ni7--ST (SUS301L--ST)
	MT	3/4H		00Cr17Ni7--MT (SUS301L--MT)
	HT	H		00Cr17Ni7--HT (SUS301L--HT)

执行标准: Q/太新011—2005、日标、欧标
Executive standards: Q/Taixin011—2005, Japanese standards and European standards.

◆ 相关行业图片 Reference picture



不锈钢地铁客车 (用钢00Cr17Ni7系列)
Stainless steel subway passenger carriage (00Cr17Ni7 series)



200公里动车 (用钢1.4318)
Multiple Units Train with 200 km (1.4318 steel)

◆ 图表: 包括牌号、成分、力学性能、生产能力等
Tables with grade, Chemical composition, Mechanical property and capacity

● 牌号及化学成分
Grade and Chemical composition

表1 化学成分 (%) Table 1: Chemical Components (%)

牌号 Grade	C	Si	Mn	P	S	Cr	Ni	N
00Cr17Ni7 (SUS301L)	≤0.03	≤1.00	≤2.00	≤0.045	≤0.03	16.00 ~ 18.00	6.00 ~ 8.00	≤0.20
0Cr18Ni9 (SUS304)	≤0.07 (≤0.08)	≤1.00 (≤1.00)	≤2.00 (≤2.00)	≤0.035 (≤0.045)	≤0.03 (≤0.03)	17.00 ~ 19.00 (18.00 ~ 20.00)	8.00 ~ 11.0 (8.00 ~ 10.5)	

● 机械性能 Mechanical property

板及带按GB3280—1992及GB4237—1992相关内容进行机械性能试验
Concerning sheets and strip, the mechanical property test is performed according to GB3280—1992 and GB4237—1992

各强度级别 (LT、DLT、ST、MT、HT) 机械性能见表2
For mechanical property with strength grade (LT, DLT, ST, MT, HT) respectively, see Table 2.

表2 机械性能 Table 2: Mechanical Property

牌号 Grade	强度级别 Strength class	平整代号 Skin passing NO.	表面加工 Surface processing	Rt _{0.2}		Rm		A%
				最小 Min	最大 MAX	最小 Min	最大 MAX	
00Cr17Ni7 (SUS301L)	LT		2B或No.1	215		550		≥45
	DLT	1/4H		345	(485)	690	(865)	≥40
	ST	1/2H	2B	410	(550)	760	(930)	≥35
	MT	3/4H		480	(655)	820	(1000)	≥25
	HT	H		685	(830)	930	(1140)	≥20
0Cr18Ni9 (SUS304)			2B或No.1	205		520		≥40

三. 铁路货运车辆用耐候钢 The atmosphere resistant steel for railway carriage

◆ 产品的性能、特点、应用领域及用途, 应用业绩表述等

产品名称: Q450NQR1、09CuPCrNi-A、09CuPTiRe-A、H-09CuPCrNi-A;

产品规格: 2-20mm*900-2100mm*C (L);

产品介绍: 太钢可以生产铁路货运车辆用耐候钢, 产品供应中国南车股份有限公司、中国北车股份有限公司及路外车辆生产厂, 为国内耐候钢的主要生产厂家;

产品用途: 用于制造及检修铁路货运车辆包括C70、C64敞车、P70棚车等;

产品特点: 规格齐全, 具有良好的焊接性、冷成形性和耐腐蚀性;

产品性能: 经用户使用, 我公司产品表面质量好、板形平整、尺寸公差控制精度高, 性能稳定、冷成型性好有良好的焊接和耐腐蚀性能;

产品市场动态: 随着国家加大铁路基础建设的投入, 耐候钢的需求势必呈现快速增长趋势。到目前为止全国任何一家生产铁路货运车辆的路内外企业均使用过我公司的耐候钢产品。

◆ Description on performance, characteristic, application, usage, reference and so on.

Product Designation: Q450NQR1, 09CuPCrNi-A, 09CuPTiRe-A and H-09CuPCrNi-A;

Product Specification: 2-20mm*900-2100mm*C (L);

Brief Introduction of product: Being capable of using atmosphere corrosion resisting steel to produce railroad freight vehicles and supplied to China South Locomotive & Rolling Stock, China North Locomotive & Rolling Stock as well as external-road vehicle manufactures, Tisco is the dominant domestic supplier of atmosphere corrosion resisting steel.

Product Application: To be used to manufacture and repair railway freight vehicle including C70 & C64 open wagon as well as P70 shelf car, etc.

Features of product: A complete range of specification with good welding property, cold-forming property and anti-corrosion is available.

Product Performance: With good surface quality, smooth sheet shape, high controlling precision for dimension tolerance, stable performance, excellent cold-forming property with good welding and anti-corrosion property.

Markets current situation: Along with Chinese government increases investment into national railway infrastructure construction, the demand for atmosphere corrosion resisting steel is tending to rise quickly. Up to now, whatever the internal road or external road enterprise, the manufactures of railroad freight vehicles have ever used Tisco product of atmosphere corrosion resisting steel.

◆ 相关行业图片 Reference picture



敞车
Railway open carriage



棚车
Railway canopy carriage

◆ 耐候钢（含集装箱板）包括牌号、成分、力学性能、生产能力等

Atmosphere resistant steel (including container plates)

Table is as below including brand No., chemical composition, mechanical property, production capacity, etc.

牌号 Steel grade	成品厚度 mm Finished product thickness	力学性能 Mechanical property					化学成分% Chemical composition %										
		屈服强度 MPa Yield strength	抗拉强度 MPa Tensile strength	伸长率% Elongation rate	180°冷弯 Cold bending	V型冲击 V type impact		C≤	Si	Mn	P	S≤	Cu	Cr	Ni	Ti	Re
						试验温度 ℃ Test temperature	冲击功 J Impact power										
09CuP TiRe-A	3.0-≤6 >6-14.0	295	390	≥24	d=a d=2a	-40℃	21	0.12	0.20-0.40	0.25-0.55	0.06-0.12	0.020	0.25-0.50	-	-	≤0.03	0.010-0.040
09CuP CrNi-A	3.0-≤6 >6-14.0	345	480	≥24	d=a d=2a	-	-	0.12	0.25-0.75	0.20-0.50	0.06-0.12	0.020	0.25-0.50	0.30-1.25	0.12-0.65	-	-
SPA-H	1.6-≤6 >6-12.0	345	480	δ 50≥22 δ 200≥15	B=35mm, d=a B=35mm, d=3a	-	-	0.12	0.25-0.75	0.20-0.50	0.07-0.15	0.040	0.25-0.60	0.30-1.25	≤0.65	-	-
Q450N QR1	4.0-≤6 >6-14 >14-20	450	550	≥22 ≥20 ≥19	d=a d=2a d=3a	-40℃	60	0.12	≤0.75	≤1.50	≤0.025	0.008	0.20-0.55	0.30-1.25	0.12-0.65	-	-
T550W	1.5-≤8.0	550	600	≥18	B≥35mm, d=1.5a / d=2a	-	-	0.12	≤0.75	≤1.80	≤0.030	0.020	0.25-0.55	0.30-1.25	≤0.65	-	-

我公司耐候钢热轧卷板年生产能力共计40万吨以上

Our company's annual production capacity of hot-rolled coil is totally 400,000 tons

产品应用 >>>

Application

我公司的耐候钢已成功运用于国铁车辆C60和C70系列敞车，及P70系列棚车和特种车辆。

铁路货车车体使用耐候钢后其使用寿命明显优于普通碳钢车体。在同等载重量车型比较中，高强度耐候钢使用量比使用普通普通耐候钢减少约10%，可有效的降低车辆自重和钢材的使用量。

Our company's atmosphere corrosion resisting steel has been successfully used in national railway vehicles C60 and 70 series of open wagon and P70 series of shelf car and special vehicles.

The service lifetime of railroad freight train body made of atmosphere corrosion resisting steel remarkably longer than those made of regular carbon steel. In comparison of vehicle with different shapes but same load weight, the consumption of high-strength atmosphere corrosion resisting steel cuts down about 10% than the common atmosphere corrosion resisting steel, which effectively reduces the dead load of vehicle and the consumption of steel material.



用户使用指南 >>>

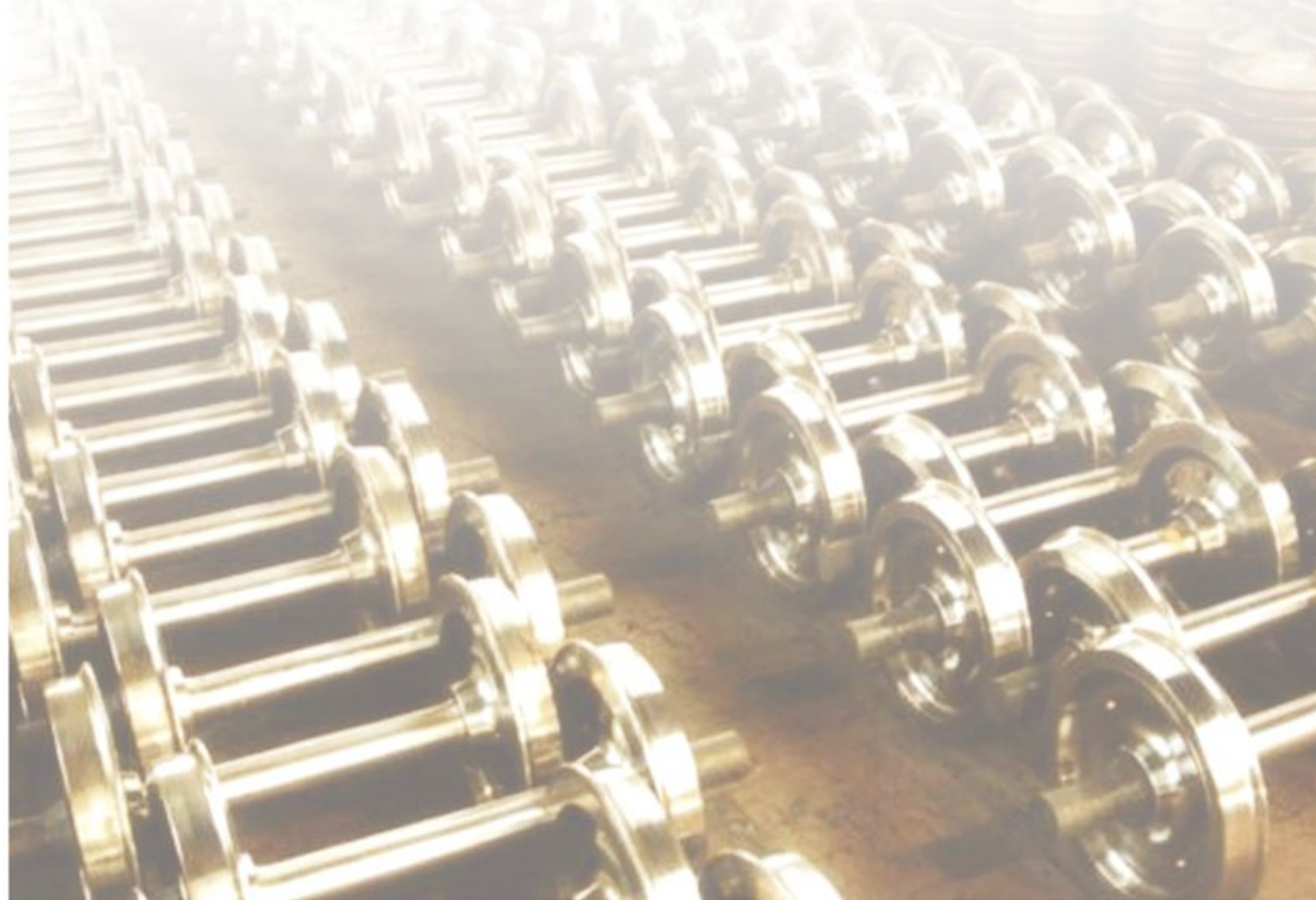
User Instruction

◆ 压延工艺：09CuPTiRE和09CuPCrNi-A两种耐候钢具有良好的压延性能，用该材料制造的冷弯型钢成型美观，裂纹产生几率少

◆ 焊接性：09CuPTiRE和09CuPCrNi-A两种材料经过长时间的运用考验，具有良好的焊接性能，且其焊接规范、焊丝等已制定成了标准。Q450NQR1研制成功后，在各货车制造单位和钢厂的共同努力下，经过大量的焊接试验，制定了Q450NQR1钢材的焊接规范，经过几年的实际运用考验，证明Q450NQR1具有较好的焊接性能

◆ 热敏感性：铁路货车钢结构焊接后不可避免地要遇到火焰矫正，火焰校正温度一般会达过1000℃。在使用过程中，当采用09CuPTiRE和09CuPCrNi两种材质时，制造工厂一般可以采取火焰矫正；当采用Q450NQR1材质时，经过试验，当温度超过700℃时，对钢材机械性能及晶粒度的有一定的影响，因此Q450NQR1材质火焰校正温度一般要求不超过680℃

◆ 耐腐蚀性：暴露于自然环境条件下，由于耐候钢表面可形成具有保护效应的稳定锈层，使得耐候钢可以在多数条件下不经涂装即可裸露使用，如应用于桥梁、塔桅、灯柱、高速公路导轨。但对于重腐蚀环境条件下，耐候钢必须经涂装后方可使用



◆ Rolling Process:

Being made of 09CuPTiRE and 9CuPCrNi-A of atmosphere corrosion resisting steel which has good rolling performance, roll-formed shape steel is with beautiful shape and less crack generating rate.

◆ Welding property:

After a long term of application test, 09CuPTiRE and 9CuPCrNi-A have good welding performance. In addition, the standards concerning welding specification and welding wire have been made. After the successfully research and development of Q450NQR1 and with the joint efforts of all freight train manufacturers and steel plants, the welding specification of Q450NQR1 steel has been made under amounts of welding tests. Through years of practically application experiment, it has been proved that Q450NQR1 is with preferable welding performance.

◆ Thermo sensitivity:

After the steel configuration welding, the railroad freight vehicle will inevitably encounter the fire calibration which the temperature is above 1000℃ usually. In practice of production, when 09CuPTiRE and 9CuPCrNi are used, the manufacture will carry out fire calibration. In the case of Q450NQR1, the experiment has proved that the impact on steel mechanical property and grain fineness will happen while the temperature exceeds 700℃. Therefore, the temperature of fire calibration of Q450NQR1 usually is not over 680℃.

◆ Anti-corrosion:

When atmosphere corrosion resisting steel exposes in nature, stable rust with protection effect will form on its surface, which results in this steel can be used without any coating, i.e. can be used nakedly in such as bridge, tower, lampstandard, express-road guide rails, etc. But in the severe corrosive condition, this steel must be coated before using.

研发目标 >>>

Research and Development Target

我公司为了满足铁路行业高速和重载的要求

- ◆ 提高耐候钢的强度：开发屈服强度在550Mpa以上的耐候钢
- ◆ 提高材料的耐腐蚀性能：相对腐蚀率降至Q345的40%以下
- ◆ 提高压延性：材料在提高强度的同时，有良好的塑性和冷弯性能，屈强比控制在 < 0.75
- ◆ 提高焊接性：材料应有良好的焊接性，在环境温度0℃下无论是进行手工电弧焊还是气体保护焊，应不会产生焊接冷裂纹，并且焊接接头综合性能良好
- ◆ 提高板材表面质量：平面度1.5mm/M²，减少工厂校平的工作量。板材表面不应有拉毛、桔皮、刮伤、滑移线和浮锈等
- ◆ 提高材料的经济性：满足铁路货运车辆25年使用的要求

In order to meet the demands of high speed and heavy load in railway industry, our company carries out some works as following:

- ◆ Increasing the strength of the atmosphere corrosion resisting steel:
The yield strength of atmosphere corrosion resisting steel has been developed more than 550Mpa.
- ◆ Enhancing the anti-corrosion property of the material:
The relative corrosion rate has reduced to less than 40% of the material Q345.
- ◆ Raising rolling property:
Expecting together with the increased strength, good plasticity and cold bending property would be achieved and yield ratio would be limited to < 0.75.
- ◆ Improving welding property:
With good welding property, cold or hot welding cracks should not occur whatever the manual electric arc welding or gas protection welding is achieved while the ambient temperature is 0 °C and the welding joint is of good overall property and endurance characteristic.
- ◆ Raising the surface quality of sheet products:
The flatness of 1.5mm/m² to reduce the leveling work in plant. The defects, such as burs, orange-peel, scratches, slip-line and float rust should not exist on the surface of the sheet products.
- ◆ Enhancing the economy coefficient of the material:
Shooting at to meet the demand of 25-year-service lifetime of railroad freight vehicles.

服务承诺 >>>

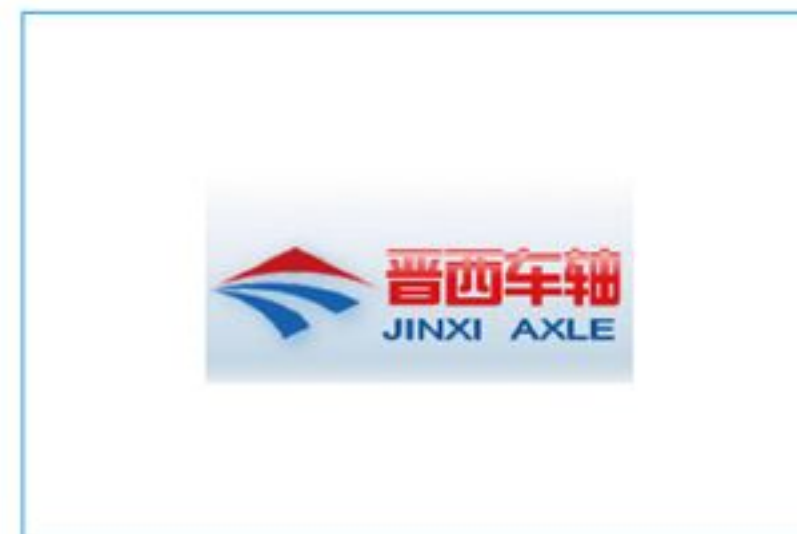
Service Promise

- 为客户提供个性化成份、性能、包装、卷重、质保书的设计
- 为客户在选才和加工工艺方面提供技术支持
- 交货准确及时
- 对客户异议，在24小时内答复
- ◆ To provide consumers with the personalized designs on composition, propertiesproperty, packing, coil weight and quality certificate
- ◆ Technical support to customers in material selection fabrication
- ◆ Accurate and prompt delivery
- ◆ Response to customer's claim within 24 hours



合作伙伴 >>>

Cooperative Partner



主要业务部门联系方式 >>>

Contacting Manners of the Main Business Sections

股份公司主要业务部门 Main business department of Co.,Ltd.	业务功能 Functions	联系电话 Telephone	E-mail
营销部 Marketing Department	合同管理、订货、异议、 投诉受理及出口贸易 Contract and order management Complaint and claim handing Exports business	0351-3014947 0351-3011051 0351-3012277 800-806-1998 400-653-1998	tgxsc@tisco.com.cn xscxsk@tisco.com.cn xsczjbk@tisco.com.cn songjun@tisco.com.cn Tgyhfwk@tisco.com.cn
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	郑州太钢销售有限公司 Zhengzhou TISCO sales Co.,Ltd	郑州 Zhengzhou	
太钢东北区销售公司 TISCO sales company in Northeast of China	辽宁太钢销售有限公司 Liaoning TISCO sales Co.,Ltd	沈阳 Shenyang 电话 (Tel) 024-24232050 邮编 (Post code) 110016	传真 (Fax) 024-24231216
	哈尔滨太钢销售有限公司 Haerbin TISCO sales Co.,Ltd	哈尔滨 Haerbin	
太钢华东区销售公司 TISCO sales company in East China	无锡太钢销售有限公司 Wuxi TISCO sales Co.,Ltd	无锡 Wuxi 电话 (Tel) 0510-82407713 邮编 (Post code) 214011	传真 (Fax) 0510-82441187
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	杭州太钢销售有限公司 Hangzhou TISCO sales Co.,Ltd	杭州 Hangzhou	
太钢山东区销售公司 TISCO sales company in Shandong	青岛太钢销售有限公司 Qingdao TISCO sales Co.,Ltd	青岛 Qingdao 电话 (Tel) 0532-81101847 邮编 (Post code) 266000	传真 (Fax) 0532-87734798
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	武汉太钢销售有限公司 Wuhan TISCO sales Co.,Ltd	武汉 Wuhan 电话 (Tel) 027-85615300 邮编 (Post code) 430015	传真 (Fax) 027-85615311
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	佛山市太钢不锈钢销售有限公司 Foshan TISCO Stainless Steel Sales Co.,Ltd	佛山 Foshan 电话 (Tel) 0757-83315711 邮编 (Post code) 528041	传真 (Fax) 0757-83315718
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	重庆太钢销售有限公司 Chongqing TISCO sales Co.,Ltd	重庆 Chongqing 电话 (Tel) 028-87604342 邮编 (Post code) 610036	传真 (Fax) 028-87604342
太钢西北区销售公司 TISCO sales company in Northwest of China	成都太钢销售有限公司 Chengdu TISCO sales Co.,Ltd	成都 Chengdu	
太钢西北区销售公司 TISCO sales company in Northwest of China	西安太钢销售有限公司 Xi'an TISCO sales Co.,Ltd	西安 Xi'an 电话 (Tel) 029-86231507 邮编 (Post code) 710016	传真 (Fax) 029-86231506